IN THE CLAIMS:

Please amend the claims as follows:

Claims 1 – 18 (Canceled)

19. (Withdrawn) The chimeric protein of Claim 1 which further comprises or a cellular uptake signal.

20. (Withdrawn) The chimeric protein of Claim 19 which further comprises a nuclear-localization signal.

21. (Withdrawn) A pharmaceutical composition comprising a therapeutically effective amount of the chimeric protein of Claim 1 in admixture with a pharmaceutically acceptable carrier.

22. (Currently Amended) A nucleic acid comprising a nucleotide sequence encoding **a** ~~the~~ chimeric protein ~~of Claim 1~~**comprising one or more first domains capable of specifically binding a nucleotide sequence associated with a target gene and one or more second domains capable of associating with the nuclear periphery, wherein at least one of said first domains is heterologous with respect to at least one of said second domains**.

23. (Original) An expression vector comprising the nucleic acid of Claim 22.

24. (Original) A host cell comprising the expression vector of Claim 23.

25. (Withdrawn) A method of preparing a chimeric protein which comprises

(a) culturing the host cell of Claim 24 for a time and under conditions to express said chimeric protein; and

(b) recovering said chimeric protein.

26. (Original) The expression vector of Claim 23, wherein said vector is a eukaryotic expression vector adapted for transfection into a cell containing a target gene for regulation.

27. (Previously Presented) A pharmaceutical composition comprising a therapeutically effective amount of the nucleic acid or expression vector of Claim 22 in admixture with a pharmaceutically acceptable carrier.

28. (Withdrawn) A method of binding a target nucleic acid with a chimeric protein which comprises contacting a target nucleic acid containing a nucleotide sequence associated with a target gene with the chimeric protein of Claim 1 in an amount and for a time sufficient for said protein to bind to said target nucleic acid.

29. (Withdrawn) A method of repressing or down regulating expression of a target gene which comprises contacting nucleic acid containing a nucleotide sequence associated with or in sufficient proximity to said target gene with a chimeric protein of Claim 1 in an amount and for a time sufficient for said chimeric protein to repress or down regulate expression of said target gene.

30. (Withdrawn) The method of Claim 28, wherein said chimeric protein is introduced into a cell or an organism as a protein or as a nucleic acid encoding said protein.

31. (Withdrawn) The method of Claim 28, wherein said chimeric protein further comprises a nuclear-localization signal.

32. (Withdrawn) The method of Claim 28, wherein said chimeric protein further comprises a cellular-uptake signal.

33. (Withdrawn) The method of Claim 28, wherein said target gene encodes a mammalian gene, an insect gene or a yeast gene.

34. (Withdrawn) The method of Claim 33, wherein said target gene is from a mammal and encodes a cytokine, an interleukin, an oncogene, an angiogenesis factor, an anti-angiogenesis factor, a drug resistance protein, a growth factor or a tumor suppressor.

35. (Withdrawn) The method of Claim 28, wherein said target gene encodes a viral gene.

36. (Withdrawn) The method of Claim 35, wherein said viral gene is from a DNA virus.

37. (Withdrawn) The method of Claim 28, wherein said target gene encodes a plant gene.

38. (Withdrawn) The method of Claim 37, wherein said plant gene is from tomato, corn, rice or a cereal plant.

39. (Withdrawn) The method of Claim 28, wherein said target gene is from a commercial animal.

40. (Withdrawn) A molecular switch system comprising

(a) a first fusion protein comprising a first domain capable of specifically binding a nucleotide sequence associated with a target gene, and a second domain capable of specifically binding to a first binding moiety of a divalent ligand, said ligand capable of uptake by a cell, wherein said first domain is heterologous with respect to said second domain; and

(b) a second fusion comprising a first domain capable of associating with the nuclear periphery and a second domain capable of specifically binding to the second binding moiety of said divalent ligand.

41. (Withdrawn) The molecular switch system of Claim 40, wherein said second domain of each fusion protein is a single chain variable region (scFv) of an antibody with specificity for its respective binding moiety of the divalent ligand.

42. (Withdrawn) A molecular switch system comprising

(a) a first fusion protein comprising a first domain capable of specifically binding a nucleotide sequence associated with a target gene, and a second domain capable of specifically binding to a binding partner, wherein said first domain is heterologous with respect to said second domain; and

(b) a second fusion protein comprising a first domain capable of associating with the nuclear periphery and a second domain comprising the binding partner of the second domain of said first fusion protein, wherein said first domain is heterologous with respect to said second domain.

43. (Withdrawn) The molecular switch system of Claim 42, wherein said second domain of the first fusion protein is an S-protein and the second domain of said second fusion protein is an S-tag, or vice-a-versa.

44. (Withdrawn) The molecular switch system of Claim 40, wherein the first domain of said first fusion protein comprises a zinc finger protein (ZFP), an artificial zinc finger protein (AZP), a leucine zipper protein, a helix-turn-helix protein, a helix-loop-helix protein, a homeobox domain protein, the DNA binding moiety of any of said proteins, or any combination thereof.

45. (Withdrawn) The molecular switch system of Claim 44, wherein said AZP comprises at least one zinc finger, each zinc finger independently represented by the formula $-X_3-Cys-X_{2-4}-Cys-X_5-Z^{-1}-X-Z^2-Z^3-X_2-Z^6-His-X_{3-5}-His-X_4-$, said finger, independently, covalently joined to additional fingers, if present, with from 0 to 10 amino acid residues; wherein

X is, independently, any amino acid and X_n represents the number of occurrences of X in the polypeptide chain;

Z^{-1} is arginine, glutamine, threonine, methionine or glutamic acid;

Z^2 is serine, asparagine, threonine or aspartic acid;

Z^3 is histidine, asparagine, serine or aspartic acid; and

Z^6 is arginine, glutamine, threonine, tyrosine, leucine or glutamic acid.

46. (Withdrawn) The molecular switch system of Claim 45, wherein

Z^{-1} is arginine, glutamine, threonine or glutamic acid;

Z^2 is serine, asparagine, threonine or aspartic acid;

Z^3 is histidine, asparagine, serine or aspartic acid; and

Z^6 is arginine, glutamine, threonine or glutamic acid.

47. (Withdrawn) The molecular switch system of Claim 45, wherein the X positions of at least one of said zinc fingers comprise the corresponding amino acids from a Zif268 zinc finger, an Sp1 finger or an Sp1C finger.

48. (Withdrawn) The molecular switch system of Claim 40, wherein the first domain of said first fusion protein comprises at least three zinc fingers, each

zinc finger represented by the formula -Pro-Tyr-Lys-Cys-Pro-Glu-Cys-Gly-Lys-Ser-Phe-Ser-Z^{-1}-Ser-Z^2-Z^3-Leu-Gln-Z^6-His-Gln-Arg-Thr-His-Thr-Gly-Glu-Lys-, said fingers directly joined to one to the other, wherein

Z^{-1} is arginine, glutamine, threonine, methionine or glutamic acid;

Z^2 is serine, asparagine, threonine or aspartic acid;

Z^3 is histidine, asparagine, serine or aspartic acid; and

Z^6 is arginine, glutamine, threonine, tyrosine, leucine or glutamic acid.

49. (Withdrawn) The molecular switch system of Claim 48, wherein

Z^{-1} is arginine, glutamine, threonine or glutamic acid;

Z^2 is serine, asparagine, threonine or aspartic acid;

Z^3 is Histidine, asparagine, serine or aspartic acid; and

Z^6 is arginine, glutamine, threonine or glutamic acid.

50. (Withdrawn) The molecular switch system of Claim 44, wherein said AZP comprises from 3 to 15 zinc fingers, any one or more of which being represented by said formula, or wherein first domain of said first fusion protein comprises from 3 to 15 zinc fingers.

51. (Withdrawn) The molecular switch system of Claim 50, wherein said AZP or said first domain comprises 6, 7, 8 or 9 zinc fingers.

52. (Withdrawn) The molecular switch system of Claim 40, wherein the first domain of said second fusion protein directly or indirectly associates with or binds to the nuclear envelope, the nuclear lamina, heterochromatin, or any combination thereof.

53. (Withdrawn) The molecular switch system of Claim 52, wherein said first domain of said second fusion is a GCL protein or a binding moiety of a GCL protein.

54. (Withdrawn) The molecular switch system of Claim 52, wherein said first domain of said second fusion protein comprises a nuclear envelope-binding protein, a nuclear lamina-binding protein, a heterochromatin-binding protein, a

protein capable of associating with or binding to any one of the foregoing, the binding moiety of any of said proteins, or any combination thereof.

55. (Withdrawn) The molecular switch system of Claim 54, wherein said nuclear lamina-binding protein or the binding moiety of said nuclear lamina-binding protein is a lamin or a lamina-binding protein.

56. (Withdrawn) The molecular switch system of Claim 54, wherein said heterochromatin-binding protein or the binding moiety of said heterochromatin-binding protein is selected from the group consisting of HP1 and a polycomb-group protein.

57. (Withdrawn) A pharmaceutical composition comprising a therapeutically effective amount of the chimeric protein of Claim 40 in admixture with a pharmaceutically acceptable carrier.

58. (Withdrawn) A nucleic acid encoding the first or second fusion protein, or both, of the molecular switch system of ~~any one of Claims 40-56~~.

59. (Withdrawn) The nucleic acid of Claim 58, wherein said first and second fusion proteins are coordinately regulated.

60. (Withdrawn) The nucleic acid of Claim 58, where said first and second fusion proteins are independently regulated.

61. (Withdrawn) An expression vector comprising the nucleic acid of Claim 58.

62. (Withdrawn) A host cell comprising the expression vector of Claim 61.

63. (Withdrawn) A method of preparing one or more fusion proteins which comprises

(a) culturing the host cell of Claim 62 for a time and under conditions to express said one or more fusion proteins; and

(b) recovering said one or more fusion proteins.

64. (Withdrawn) The expression vector of Claim 61, wherein said vector is a eukaryotic expression vector adapted for transfection into a cell containing a target gene for regulation.

65. (Withdrawn) A pharmaceutical composition comprising a therapeutically effective amount of the expression vector of Claim 64 in admixture with a pharmaceutically acceptable carrier.

66. (Withdrawn) A method of temporally or spatially repressing expression of a target gene which comprises

(a) contacting a cell or an organism containing a target nucleic acid having a nucleotide sequence associated with a target gene with the molecular switch system of Claim 40, and

(b) contacting said cell or organism with the divalent ligand of said molecular switch system at a time or in a location to allow formation of a complex between said fusion proteins and thereby repress expression of said target gene.

67. (Withdrawn) A method of temporally or spatially activating gene expression which comprises

(a) contacting a cell or an organism containing a target nucleic acid having a nucleotide sequence associated with a target gene with the molecular switch system of Claim 42; and

(b) contacting said cell or organism with a ligand at a time or in a location to disrupt association of the first and second fusion proteins and thereby derepress expression of said target gene.

68. (Withdrawn) The method of Claim 66, wherein the fusion proteins of said molecular switch system are introduced into said cell or organism as proteins, as one or more nucleic acids encoding one or more of said proteins, or as a combination thereof.

Please add the following new claims:

69. (New) The chimeric protein of Claim 22, wherein said one or more first domains comprise a zinc finger protein (ZFP), an artificial zinc finger protein (AZP), a leucine zipper protein, a helix-turn-helix protein, a helix-loop-helix

protein, a homeobox domain protein, the DNA binding moiety of any of said proteins, or any combination thereof.

70. (New) The chimeric protein of Claim 69, wherein said AZP comprises at least one zinc finger, said finger, independently, covalently joined to additional fingers, if present, with from 0 to 10 amino acid residues, wherein the amino acids at positions -1, 2, 3 and 6 of the V-helix of the zinc finger are selected as follows:

at position -1, the amino acid is arginine, glutamine, threonine, methionine or glutamic acid;

at position 2, the amino acid is serine, asparagine, threonine or aspartic acid;

at position 3, the amino acid is histidine, asparagine, serine or aspartic acid; and

at position 6, the amino acid is arginine, glutamine, threonine, tyrosine, leucine or glutamic acid.

71. (New) The chimeric protein of Claim 69, wherein said AZP comprises at least one zinc finger, each zinc finger independently represented by the formula $-X_3-Cys-X_{2-4}-Cys-X_5-Z^{-1}-X-Z^2-Z^3-X_2-Z^6-His-X_{3-5}-His-X_4-$, said finger, independently, covalently joined to additional fingers, if present, with from 0 to 10 amino acid residues; wherein

X is, independently, any amino acid and X_n represents the number of occurrences of X in the polypeptide chain;

Z^{-1} is arginine, glutamine, threonine, methionine or glutamic acid;

Z^2 is serine, asparagine, threonine or aspartic acid;

Z^3 is histidine, asparagine, serine, or aspartic acid; and

Z^6 is arginine, glutamine, threonine, tyrosine, leucine or glutamic acid.

72. (New) The chimeric protein of Claim 71, wherein

Z^{-1} is arginine, glutamine, threonine or glutamic acid;

Z^2 is serine, asparagine, threonine or aspartic acid;

Z^3 is histidine, asparagine, serine or aspartic acid; and

Z^6 is arginine, glutamine, threonine,or glutamic acid.

73. (New) The chimeric protein of Claim 71, wherein the X positions of at least one of said zinc fingers comprise the corresponding amino acids from a Zif268 zinc finger, an Sp1 finger or an Sp1C finger.

74. (New) The chimeric protein of Claim 22, wherein said one or more first domains comprise at least three zinc fingers, each zinc finger represented by the formula -Pro-Tyr-Lys-Cys-Pro-Glu-Cys-Gly-Lys-Ser-Phe-Ser-Z^{-1}-Ser-Z^2-Z^3-Leu-Gln-Z^6-His-Gln-Arg-Thr-His-Thr-Gly-Glu-Lys-, said fingers directly joined to one to the other, wherein

Z^{-1} is arginine, glutamine, threonine, methionine or glutamic acid;

Z^2 is serine, asparagine, threonine or aspartic acid;

Z^3 is histidine, asparagine, serine, or aspartic acid; and

Z^6 is arginine, glutamine, threonine, tyrosine, leucine, or glutamic acid.

75. (New) The chimeric protein of Claim 74, wherein

Z^{-1} is arginine, glutamine, threonine or glutamic acid;

Z^2 is serine, asparagine, threonine or aspartic acid;

Z^3 is histidine, asparagine, serine or aspartic acid; and

Z^6 is arginine, glutamine, threonine, or glutamic acid.

76. (New) The chimeric protein of Claim 70, wherein said AZP comprises from 3 to 15 zinc fingers, any one or more of which being represented by said formula.

77. (New) The chimeric protein of Claim 76, wherein said AZP comprises 7, 8 or 9 zinc fingers.

78. (New) The chimeric protein of Claim 77, wherein said AZP comprises 6 zinc fingers.

79. (New) The chimeric protein of Claim 22, wherein said one or more second domains directly or indirectly associate with or bind to the nuclear envelope, the nuclear lamina, heterochromatin, or any combination thereof.

80. (New) The chimeric protein of Claim 79, wherein one of said second domains is a GCL protein or a binding moiety of a GCL protein.

81. (New) The chimeric protein of Claim 79, wherein said one or more second domains comprise a nuclear envelope-binding protein, a nuclear lamina-binding protein, a heterochromatin-binding protein, a protein capable of associating with or binding to any one of the foregoing, the binding moiety of any of said proteins or any combination thereof.

82. (New) The chimeric protein of Claim 81, wherein said nuclear lamina-binding protein or the binding moiety of said nuclear lamina-binding protein is a lamin or a lamina-binding protein.

83. (New) The chimeric protein of Claim 81, wherein said heterochromatin-binding protein or the binding moiety of said heterochromatin-binding protein is selected from the group consisting of HP1 and a polycomb-group protein.

84. (New) The chimeric protein of Claim 22 comprising from one to six first domains and from one to six second domains.

85. (New) The chimeric protein of Claim 22 which further comprises a nuclear-localization signal.

86. (New) The chimeric protein of Claim 22 which further comprises a cellular uptake signal.